

**REBUTTAL TESTIMONY OF
MARGOT EVERETT
ON BEHALF OF
DOMINION ENERGY SOUTH CAROLINA, INC.
DOCKET NO. 2021-2-E**

1 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND**
2 **OCCUPATION.**

3 A. My name is Margot Everett. My business address is 101 California Street,
4 Suite 4100, San Francisco, California 94111. I am a Director for Guidehouse and
5 will provide testimony on behalf of Dominion Energy South Carolina,
6 Inc. (“DESC”).

7
8 **Q. DID YOU OFFER DIRECT TESTIMONY IN THIS DOCKET?**

9 A. No, I did not. However, I presented testimony regarding the value of solar in
10 Docket No. 2019-182-E (“Generic Docket”), which is pertinent to issues raised in
11 the pre-filed direct testimony of R. Thomas Beach, witness for the South Carolina
12 Coastal Conservation League and Southern Alliance for Clean Energy, that was
13 filed in this matter. I further note in this regard that Exhibit No. ____ (RTB-2)
14 attached to Witness Beach’s testimony is a verbatim copy of the Rebuttal Testimony
15 that was filed by him in the Generic Docket on behalf of the South Carolina Coastal

1 Conservation League, Update Forever, Vote Solar, the Solar Energy Industries
2 Association, and the North Carolina Sustainable Energy Association.

3
4 **Q. BRIEFLY STATE YOUR EDUCATION, BACKGROUND, AND**
5 **EXPERIENCE.**

6 A. I have a Master of Science and Bachelor of Arts in Applied Economics from
7 University of California, Santa Cruz. With over thirty-five years in the energy
8 industry, I have held many differing roles from evaluation and design of customer
9 programs, wholesale power contract structuring, market, credit and enterprise risk
10 management and cost of service and rate design. Recently, I spent five years leading
11 Pacific Gas and Electric's ("PG&E") electric and gas rates, load forecasting, and
12 cost of service departments. In that role, I led the development and design of
13 alternative rate designs for distributed energy resources, such as a net energy
14 metering ("NEM") tariff.

15
16 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC SERVICE**
17 **COMMISSION OF SOUTH CAROLINA (THE "COMMISSION")?**

18 A. I have previously testified in South Carolina in the Generic Docket. I also
19 have testified numerous times in California—in particular, on rate design policy and
20 alternative rate designs. Further I supervised all testimony related to rates, cost of

1 service, and load forecasting for the five years I served as Senior Director of Rates
2 and Regulatory Analytics at PG&E.

3
4 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

5 A. The purpose of my rebuttal testimony is to respond to certain matters raised
6 in the pre-filed direct testimony of Witness Beach regarding his proposed value of
7 avoided costs. Specifically, I am responding to the following recommendations
8 noted by Witness Beach on page 15, lines 20-25, of his pre-filed direct testimony:

- 9 1) accept the value of solar as calculated in Exhibit No. ____ (RTB-2);
10 2) derive a revised value of solar consistent with the methodology set out above
11 and in Exhibit No. ____ (RTB-2); or
12 3) require DESC to calculate a revised value of solar consistent with the
13 approach set out above and in Exhibit No. ____ (RTB-2).

14
15 **Q. DO YOU AGREE WITH WITNESS BEACH'S ESTIMATE OF THE**
16 **'VALUE OF SOLAR' HE CALCULATED IN EXHIBIT NO. ____ (RTB-2)?**

17 A. No. Witness Beach uses several extremely aggressive assumptions regarding
18 the values of all components of avoided costs in the NEM methodology that are
19 neither fully substantiated by data nor vetted in any regulatory setting in South
20 Carolina or elsewhere. These include estimates of avoided energy costs, generation
21 capacity avoided costs, transmission capacity avoided costs, distribution capacity

1 avoided costs, environmental avoided costs and hedging costs. Further, it is not
2 clear whether Witness Beach includes any interconnection and integration costs
3 and his method of deriving transmission and distribution losses are unclear.

4 It is also important to note that Witness Beach ignores key elements of the
5 stipulation from Docket No. 2014-246-E that established the methodology (the
6 “NEM Methodology”) that resulted in a valuation of each benefit and cost
7 component for NEM (the “NEM Methodology Values”). The NEM Methodology
8 Values are currently used for determining the incremental NEM incentive assigned
9 to the Company’s Distributed Energy Resource Program Incremental Costs for
10 recovery purposes. The NEM Methodology was the result of a settlement (the
11 “NEM Settlement”) among the following parties:

- 12 1. South Carolina Office of Regulatory Staff ("ORS");
- 13 2. Duke Energy Carolinas, LLC;
- 14 3. Duke Energy Progress, Inc.;
- 15 4. South Carolina Electric and Gas Company (now DESC);
- 16 5. Central Electric Power Cooperative, Inc.;
- 17 6. The Electric Cooperatives of South Carolina, Inc.;
- 18 7. South Carolina Coastal Conservation League;
- 19 8. Southern Alliance for Clean Energy;
- 20 9. South Carolina Solar Business Alliance, LLC;
- 21 10. Sustainable Energy Solutions, LLC;

1 11. Solbridge Energy, LLC;

2 12. The Alliance for Solar Choice; and

3 13. Sierra Club.

4 This stipulation involved not only establishing the methods but also the
5 expected requirements for evaluating each of these components. Also, it is in this
6 stipulation where the costs that are set to zero were agreed to by the above parties
7 and DESC. Witness Beach disregards this stipulation and unilaterally determines
8 the value of solar based on his own idea of what should be included, not what
9 actually is included.
10

11 **Q. BEFORE DISCUSSING EACH INDIVIDUAL ESTIMATE PROVIDED BY**
12 **WITNESS BEACH, PLEASE DESCRIBE ANY CONCERNS YOU HAVE**
13 **WITH WITNESS BEACH'S OVERALL APPROACH.**

14 A. Witness Beach falsely states that DESC arbitrarily sets value for the NEM
15 Methodology to zero. These values are not 'set' to zero but rather calculated as
16 zero. Specifically, calculation of the value of solar is a two-step process. First is
17 the quantification of an avoided cost value for each component. The second is to
18 then determine the amount of energy (kWh) or capacity (kW) avoided due to
19 customer-generation system.

20 Throughout Witness Beach's testimony, he provides an estimate of the
21 avoided cost value of the component (Step 1) using his own methodologies,

1 assumptions and data that are either inconsistent with already approved Commission
2 values or are incorrect. Other methodologies used by Witness Beach, such as
3 calculating fuel savings and carbon value, are simply not correct.

4 Next Witness Beach deviates from Commission approved estimates of the
5 contribution of customer-generation energy and capacity (Step 2) to avoiding these
6 established costs.

7
8 **Q. HAS DESC ESTIMATED ANY OF THE AVOIDED COSTS THAT**
9 **WITNESS BEACH CLAIMS DESC ARBITRARILY SET TO ZERO?**

10 A. Yes. For the purpose of evaluating energy efficiency programs DESC
11 calculates the generation, transmission and distribution avoided costs and uses them
12 in determining the cost-effectiveness of Demand Side Management (“DSM”)
13 programs. Therefore, these values are available and have been submitted and
14 reviewed by the Commission in Docket No. 2019-239-E. In that docket, all DSM
15 programs were evaluated using a combined value of capacity costs of \$63.37/kW¹
16 of savings. This value is escalated for 15% losses and 14% reserve margin as well
17 as an Energy Efficiency Capacity contribution factor of 63.7%. Reverse
18 engineering this value, the full avoided costs used in the DSM docket is \$75.88/kW.

19

¹ Direct Testimony of David K. Pickles, page 7, line 3, filed on behalf of DESC in Docket No. 2019-239-E.

1 **Q. PLEASE DESCRIBE WHICH AVOIDED COSTS ESTIMATES**
2 **PROVIDED BY WITNESS BEACH ARE OVERSTATED OR**
3 **INCORRECT?**

4 A. Several of Witness Beach's estimates are overstated and incorrect, namely:

- 5 1. Avoided Energy Cost;
- 6 2. Avoided Generation Capacity Cost;
- 7 3. Avoided Transmission Capacity Cost;
- 8 4. Avoided Distribution Capacity Cost;
- 9 5. Avoided Fuel Costs; and
- 10 6. Avoided GHG costs.

11 Further, several of Witness Beach's calculations are unclear, namely:

- 12 1. Avoided Energy Cost;
- 13 2. Losses;
- 14 3. Avoided Criteria Pollutants;
- 15 4. Utility Integration & Interconnect; and
- 16 5. Environmental Costs.

17
18 **Q. WHY IS WITNESS BEACH'S ESTIMATE OF ENERGY COSTS**
19 **OVERSTATED AND INCORRECT?**

20 A. Witness Beach's estimated energy cost is both out of date and overstated.

21 First, it is based on the previous estimates of marginal energy costs, which are being

1 updated in this proceeding using the latest estimates of energy avoided costs that
2 have also been reviewed and vetted by ORS. Second, Witness Beach's dated
3 estimate is then inflated in two ways. Third, his estimate is a levelized value over
4 a 25-year life while the NEM Methodology method uses a levelized value over a
5 10-year life based on Act No. 62. This results in overstating the value by about
6 10%. Lastly, he then escalates the dated energy value by about 6.7% annually
7 between 2030 and 2045. Witness Beach claims he used the Energy Information
8 Administration's (EIA) 2020 Annual Energy Outlook (AEO) to develop this
9 escalation. This estimate of 6.7% is far in excess of the 2.7% Compound Annual
10 Growth Rate (CAGR) derived from EIA's "Annual Energy Outlook 2020", Table
11 13. Natural Gas Supply, Disposition, and Prices, Reference case², which is the
12 information that Witness Beach used in his analysis.

13
14 **Q. PLEASE DESCRIBE WHY YOU STATED ABOVE THAT WHY WITNESS**
15 **BEACH'S ESTIMATE OF ENERGY COSTS IS ALSO UNCLEAR?**

16 A. Witness Beach included a value of \$0.0348/kWh in his summary table of all
17 avoided costs, which can be found in Table 8 of Exhibit No. ____ (RTB-2).
18 However, in his explanation of the calculation he includes a value of

² <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=13-AEO2021®ion=0-0&cases=ref2021&start=2019&end=2050&f=A&linechart=~ref2021-d113020a.31-13-AEO2021&map=&ctype=linechart&sourcekey=0>

1 \$0.03694/kWh in Table 3. The difference is roughly equal to additional avoided
2 costs related to criteria pollutants (\$0.00003/kWh) and avoided environmental
3 costs (\$0.00120/kWh). Therefore, it seems reasonable to assume this cost estimate
4 from Witness Beach includes those costs while DESC separates them out per the
5 NEM Methodology. However, his methodology is not clear and the NEM
6 Methodology requires noting if these costs are included in the Avoided Energy
7 Costs.

8
9 **Q. WHY IS WITNESS BEACH'S ESTIMATE OF GENERATION CAPACITY**
10 **COSTS INCORRECT?**

11 A. Witness Beach ignores the Commissions recent decisions regarding avoided
12 capacity costs and thus the values the Commission has approved for generation
13 capacity included in the compensation rate for solar generation. Specifically, in
14 Docket 2019-184-E the Commission established an avoided cost of generation
15 capacity of \$66.76/kW-year. Further, in January 2020, the Commission adopted a
16 Solar Capacity Contribution value of 11.8%. Applying the 11.8% capacity value
17 to the \$66.76/kW-year results in a value per kW of solar of \$7.88. An estimate of
18 the level of generation from a solar project of 1 kW over the year and with a 23.8%
19 capacity factor was then applied to this value to derive an estimate per kWh of
20 \$0.000379/kWh.

Witness Beach disregards this estimate and computes his own value. First, he develops his proposed avoided capacity costs of \$77.44/kW-year, which is 16% higher than the recently approved \$66.76/kW-year value. Then Witness Beach disregards the Commission decision in regarding the Solar Capacity Contribution percentage (11.8%) and proposes a value of 34%, which is nearly three times more than the value approved by the Commission.³ Table 1 below shows the difference in input values from Witness Beach's testimony and that provided as part of the Generic Docket. Finally, Witness Beach uses a much lower level of energy produced by the generator, further inflating his rate.

Table 1: Comparison of Witness Beach and Proposed Avoided Capacity Costs

	Witness Beach	Proposed
Annual Cost of New Capacity (\$/kW-year)	77.44	66.76
Solar Capacity Contribution (% of Capacity)	34%	11.8%
Avoided Generation Capacity (\$/kW-year)	23.10	7.88
Energy per kW Solar Capacity	1,709	2,085
Avoided Generation Capacity (\$/kWh)	0.01351	0.00379

³ <https://dms.psc.sc.gov/Attachments/Matter/19e6b91d-da62-41b6-a3e2-bb119e2a4818>

1 **Q. WHY IS WITNESS BEACH'S ESTIMATE OF TRANSMISSION**
2 **CAPACITY COSTS OVERSTATED AND INACCURATE?**

3 A. Witness Beach defined his approach of using the NERA regression method
4 to compute transmission capacity costs as best practice. While several utilities use
5 the NERA method, their input data is very different from that used by Witness
6 Beach. Witness Beach described his approach to the application of the NERA
7 method in Exhibit No. ____ (RTB-2), page 13, lines 10-21.

8 "To capture long-run marginal costs, the NERA methodology typically uses
9 at least years of data on T&D investments and peak transmission system
10 loads. This data is historical data reported in FERC Form 1, plus a current
11 forecast of future investments and expected load growth if available. I have
12 utilized NERA regressions based on DESC's historical peak load growth and
13 transmission and distribution investments over the period from 2009 to 2025,
14 using DESC's FERC Form 1 data for the historical portion of this period
15 through 2019, as well as a six-year forecast of T&D investments and load
16 growth (2020-2025). I add loaders for the operations and maintenance
17 (O&M) and administration and general (A&G) costs associated with these
18 investments in T&D rate base. These loaders are based on Form 1 data on
19 T&D O&M and A&G costs as percentages of rate base investments."

20 While most of what Witness Beach describes as the typical use of NERA is
21 correct, Witness Beach's application of the method for computing DESC's T&D
22 marginal costs is incorrect in establishing avoided transmission capacity costs
23 related to load growth, which is the appropriate avoided costs for assessing the
24 value of solar. Specifically, Witness Beach uses *all* transmission costs between
25 2009 and 2019 from FERC Form 1 and again all costs from the T&D investment
26 growth plan from 2020-2025. These costs include costs not related to load growth,
27

1 to include safety, grid hardening and modernization, lifecycle replacement and
2 repair. As a result, the regression will compute a relationship in the growth of all
3 transmission costs relative to load growth, not costs associated with load growth.
4 To correct this, most utilities, like DESC, study the transmission data and identify
5 projects for load growth. Specifically, they review all projects planned and identify
6 which projects are ‘avoidable’ if load were to be less than forecasted. This error
7 by Witness Beach results in a significantly higher estimate of avoided transmission
8 marginal costs.

9 Witness Beach also applies a solar capacity contribution value of 42.5%.
10 Witness Beach provides no evidence as to whether transmission costs are indeed
11 avoided as a result of customer generation. Rather he merely states in Exhibit No.
12 ____ (RTB-2), page 12, lines 7-11:

13 Because a solar PV project’s output will serve much of a customer’s on site
14 load, without ever flowing onto the grid, DESC may expect to see reduced
15 loads on its T&D system. The remaining power that is be exported to the
16 grid is likely to be substantially consumed by neighboring distribution loads,
17 thus unloading the upstream DESC transmission and distribution systems.
18

19 This statement first incorrectly states that “PV project’s output will serve
20 much of a customer’s on-site load”. Historical NEM data from DESC shows that
21 only 48% of on-site generation offsets customer use, thus relying on DESC’s
22 distribution and transmission system to wheel 52% of their output to other
23 customers or the wholesale market.

1 In numerous dockets DESC has demonstrated that transmission costs cannot
2 be avoided, or saved, by generation from a solar customer-generator. This is in
3 part because the generation from the customer-generator is intermittent and thus
4 the generation cannot be relied upon from a planning perspective. Clearly, with
5 the winter peak occurring in the early morning, prior to the sun rising or customer-
6 generators producing energy, the transmission capacity needed to meet winter peak
7 cannot be avoided.

8 Finally, Witness Beach inflates his final estimates by 118% to account for
9 the levelized value over 25-year life, while the NEM Methodology is designed to
10 calculate a 10-year levelized price. This inflation factor should be closer to 108%
11 to reflect that overstatement.

12
13 **Q. DID DESC CALCULATE AVOIDED TRANSMISSION CAPACITY**
14 **COSTS?**

15 A. Yes. For estimating the benefits of energy efficiency programs, DESC
16 develops transmission avoided costs. In DSM Potential Docket 2019-239-E,
17 DESC provides the computation of total transmission capacity avoided costs as
18 \$71.12/kW. Applying a loading factor of 10.79% to convert this value to an annual
19 value (a similar technique to that used by Witness Beach), yields an average of
20 \$7.67/kW. This \$7.67/kW value is 89% lower than Witness Beach's estimate of
21 \$63.56/kW.

1 Once the avoided costs are calculated, the application of those costs to
2 determine the benefit of customer generation on the Transmission system is
3 computed by assuming a contribution to capacity factor. As noted above, DESC
4 has demonstrated in numerous dockets that solar customer-generation does not
5 offset transmission capacity needs and thus the contribution to reduction in avoided
6 transmission capacity costs is zero. For this reason, DESC proposes a value of zero
7 for transmission avoided costs for the NEM Methodology.

8
9 **Q. WHY IS WITNESS BEACH'S ESTIMATE OF DISTRIBUTION**
10 **CAPACITY COSTS OVERSTATED AND INACCURATE?**

11 A. For the same reasons noted above regarding transmission costs, Witness
12 Beach's estimates of distribution avoided costs will be over-stated because he
13 includes costs in his estimation that are not related to peak demand growth.
14 Further, Witness Beach also applies a solar capacity contribution value of 35.6%
15 with no real detail or evidence that the value is appropriate. Specifically, as noted
16 by Witness Beach, distribution capacity is typically driven by non-coincident peak.
17 Non-coincident peak for customer-generators will be driven by when customer's
18 peak after generation. Since the generation from solar customer-generation is
19 intermittent, the customer's non-coincident peak is also equal to the customer's
20 peak load.

1 **Q. DID DESC CALCULATE AVOIDED DISTRIBUTION CAPACITY**
2 **COSTS?**

3 A. Yes. For estimating the benefits of energy efficiency programs, DESC
4 develops distribution avoided costs. In DSM Potential Docket 2019-239-E, DESC
5 provides the computation of total transmission capacity avoided costs as
6 \$172.23/kW. Applying a loading factor of 10.79% to convert this value to an
7 annual value (a similar technique to that used by Witness Beach), yields an average
8 of \$18.58/kW. This \$18.58/kW value is 80% lower than Witness Beach's estimate
9 of \$92.57/kW.

10 As with transmission avoided costs, once the avoided distribution capacity
11 costs can be calculated, the application of those cost to determine the benefit of
12 customer generation on distribution system is computed by assuming a contribution
13 to capacity factor. As noted above, the customer's demands for distribution
14 capacity are driven by the customer's non-coincident peak. For planning purposes,
15 DESC cannot rely on the customer-generation to meet all the customer's needs
16 because of the intermittency of that generation. For this reason, the computed value
17 of distribution avoided costs above is multiplied by zero and, thus, distribution
18 avoided costs for the NEM Methodology are zero.

19 Also, as noted above, Witness Beach uses a 25-year life rather than the
20 prescribed 10-year life, overstating his values by about 10%.

Q. CONSIDERING THE ABOVE CALCULATIONS FOR TRANSMISSION AND DISTRIBUTION CAPACITY AVOIDED COSTS, WHAT IS YOUR RECOMMENDATION?

A. The Commission should approve the NEM Methodology values for transmission and distribution avoided costs recommended by Witness Bell. Table 2 summarizes the calculation of these values and compares them to Witness Beach's proposed values.

Table 2: Computation and Comparison of T&D Avoided Costs

	Avoided Transmission Capacity (\$/kW-year)	Solar Capacity Contribution	Solar Annual Output (kWh per kW) ⁴	Avoided Transmission Capacity (\$/kWh) A*B/C	Levelized Multiplier	Adjusted for Levelized Value (\$/kWh)
	A	B	C	D	E	E
Transmission						
Witness Beach	63.56	42.50%	1,709	0.01581	1.18	0.01861
DESC Proposed	7.67	0%	2,085	0.00000	1.08	0.00000
Distribution						
Witness Beach	92.57	35.60%	1,709	0.01928	1.18	0.02270
DESC Proposed	18.58	0%	2,085	0.00000	1.08	0.00000

Q. WHY IS WITNESS BEACH'S ESTIMATE OF ENVIRONMENTAL COSTS INACCURATE?

A. Witness Beach notes in Exhibit No. ____ (RTB-2), page 17, line 22-page 18, line 2:

“DESC’s 2020 IRP assumes carbon costs of \$25 per MT for compliance with future GHG regulations. I assumed this cost increases with inflation at 2% per year. Using the conversion factor that burning a MMBtu of natural

1 gas produces 117 pounds of carbon dioxide, DESC's IRP assumption for
2 GHG compliance costs is equivalent to approximately a \$1.50 per MMBtu
3 adder to the cost of natural gas. Assuming a 6,500 Btu/kWh marginal system
4 heat rate, this component becomes \$0.00951 per kWh in 2020, or \$0.01124
5 per kWh on a 25-year levelized basis."

6
7 His estimate of \$0.00951/kWh is inaccurate for several reasons. First, the NEM
8 Methodology stipulation notes that CO₂ emissions costs will be zero until such time
9 that the state or federal laws or regulations include costs. Specifically, Order No.
10 2015-194, on page 9, states as follows:

11 "The cost of CO₂ emissions may be included in the Avoided Energy
12 Component, but, if not, they should be accounted for separately. A zero
13 monetary value will be used until state or federal laws or regulations result
14 in an avoidable cost on Utility systems for these emissions."

15
16 As such, DESC continues to comply with this stipulation and the related
17 Commission decision.

18 Next, the GHG costs referenced in Witness Beach's testimony are dated.
19 DESC has since refiled their IRP and included values for carbon ranging from
20 \$0/MT to \$35/MT with \$12/ton being the expected case. Further, the updated
21 estimate of \$12/ton only comes into effect in 2030. This results in a levelized value
22 of \$1.20/ton compared to Witness Beach's estimate of \$32.03/MT⁵. This, once
23 again, demonstrates Witness Beach's practice of overstating values quite
24 dramatically.

⁵ Following Witness Beach's description, DESC calculated this value as \$25/MT escalating at 2% inflation over 25 years and then levelized using 7.9% cost of capital.

1 Despite Witness Beach's extreme exaggeration of these benefits, it is clear
2 that there are currently no state or federal regulations that result in DESC incurring
3 costs related to CO₂, and thus in compliance with the stipulation, this value should
4 remain zero.

5
6 **Q. WHY IS WITNESS BEACH'S ESTIMATE OF HEDGING COSTS**
7 **INACCURATE AND MISLEADING?**

8 A. In Exhibit No. ____ (RTB-2), page 15, lines 11-18, Witness Beach claims renewable
9 generation

10 "provides a long-term hedge against volatile fuel costs for the entire 25-year
11 economic life of, for example, a solar unit. As discussed in my opening
12 testimony, calculations of this component underestimate this benefit by
13 focusing on the costs of existing utility hedging programs. These programs
14 only reduce the volatility in short-term fuel and purchased power expenses
15 for the next one to three years. In contrast, there are substantial financial
16 costs to establish a long-term hedge equivalent to what renewable
17 generation provides."

18 This statement neglects to account for "Covariance risk", which is the risk
19 that a renewable generator has a strong and typically negative relationship between
20 production and market prices. That is, gas must still be purchased to run the gas
21 generators when the renewable generators are not available, and gas prices during
22 those times tend to be higher because demand for gas is higher. Further, there is
23 the issue of scarcity events. In such events, gas prices can be even higher due to
24 lack of supply, and the probability that these supply scarcity events when there is
25

1 renewable power available is low (because gas demand is high due to demand for
2 generation). Therefore, the benefit of renewables to hedge gas costs in the short
3 term is questionable. Nevertheless, as part of the NEM Methodology, the costs
4 included for hedging to offset short term costs are to be considered. In DESC's
5 case, this short-term value is deemed zero for DESC because DESC does not hedge
6 gas.

7 As for the long-run hedging value noted by Witness Beach, 'benefit' is
8 already captured in the avoided cost estimates. That is, the avoided costs assume
9 some level of generation to meet load from a portfolio, which includes renewables,
10 and thus lower reliance on natural gas. Therefore, this long-term hedge value is
11 already 'baked into' the avoided costs. Further, this benefit grows with larger
12 penetrations of renewable energy that displaces gas generation and thus lowering
13 average costs over time. To include this 'hedging value' in the long term would be
14 double counting. For this reason, the long-term incremental value of hedging is
15 zero.

16 Witness Beach goes on to describe how he captures this long-term hedge
17 value in Exhibit No. ____ (RTB-2), page 16, lines 5-10:

18 "This approach recognizes that one could contract for future natural gas
19 supplies today, and then set aside in risk-free investments the money needed
20 to buy that gas in the future. This would eliminate the uncertainty in future
21 gas costs. The additional cost of this approach compared to purchasing gas
22 on a 'pay as you go' basis (and using the money saved for alternative
23 investments) is the benefit of reducing the uncertainty in the costs for the
24 fuel that solar PV displaces."

1 This is simply not how gas hedging works. Gas hedging can be either a
2 physical or financial instrument. That is, either the utility enters into long term
3 physical gas purchase agreement (as inferred by Witness Beach's statement above),
4 or they agree to a financial instrument that basically accounts for the difference in
5 an agreed to price and the actual market price, providing the 'difference' in cash
6 value back to the utility. In both cases, the 'settlement' of these contracts occurs
7 when gas is delivered. That is, the utility does not pay for gas to be used in 2025
8 until the gas is actually delivered in 2025. Therefore, no cash is 'held' until 2025
9 to pay for the gas. In fact, the only money that may exchange hands between the
10 buyer and the seller of either the physical or financial hedge is due to credit margin
11 calls. In most cases, these hedging contracts have provisions to protect against
12 default. Therefore, if the price of the underlying (e.g., gas price) increases, the
13 buyer now faces credit risk that the seller will not deliver, and the hedge is no longer
14 applicable. To protect against this, the seller is usually required to post collateral
15 equal to some percentage of the difference in value between the current market and
16 the hedge value. Conversely, if prices go down the seller has the risk that the buyer
17 will not buy at the contracted value, losing the upside of the difference between
18 market and the sale price. Since the risk that the utility is hedging is that costs are
19 higher than expected, these collateral requirements will be small and not produce
20 the level of cash outlay as contemplated with Witness Beach's technique. As a
21 result, the hypothetical cost of long-term hedging would be zero.

1 Lastly, Witness Beach's approach would not actually hedge the gas price
2 volatility. He simply is contemplating a structure where the utility 'sets aside' the
3 equivalent gas purchase costs and does not make those funds available and thus the
4 utility loses the opportunity costs of those funds. He is not contemplating the actual
5 purchase of a hedge. This means that the company is just holding the money to buy
6 gas for hedge value and will pay the actual costs of gas at the time it is needed.

7
8 **Q. WHY DO YOU NOTE THAT IT IS UNCLEAR WHETHER WITNESS**
9 **BEACH INCLUDES VALUES FOR INTEGRATION AND**
10 **INTERCONNECTION COSTS IN HIS CALCULATION OF AVOIDED**
11 **COSTS?**

12 **A.** Witness Beach notes that he excludes approximately \$0.001/kWh of costs
13 from the 'benefits' in his cost-benefit analysis, but he does not explicitly describe
14 subtracting these costs from his estimate of the value of solar. Because his estimate
15 of avoided energy costs is different in his summary table (Table 8) versus his
16 explanation of the derivation in these costs (Table 3), it further creates ambiguity
17 as to whether these costs are excluded. Care should be taken to ensure all costs
18 components in the NEM Methodology are explicitly noted, per the stipulation,
19 before adopting any final value.

1 **Q. DOES WITNESS BEACH USE LOSS FACTORS CONSISTENT WITH**
2 **THE NEM METHODOLOGY?**

3 A. No. Witness Beach calculates losses based on an alternative analysis. He
4 briefly describes his method but offers no detail explanation as to the calculation
5 and he ignores the value used historically in the NEM Methodology. His losses for
6 capacity and energy are also far in excess of the historically applied 7.55% and he
7 appears to apply different loss factors for capacity versus energy.

8 Without further clarification for both the different values for capacity and
9 energy losses and the overall values being far different than those represented and
10 agreed to by this Commission in similar proceedings, these losses values should be
11 disregarded.

12
13 **Q. WHAT SHOULD THE COMMISSION USE FOR LOSSES?**

14 A. Currently the NEM Methodology takes transmission and distribution losses
15 of 7.55% and applies them to the total costs. Specifically, this method divides sum
16 of all avoided costs by 1-Losses (or 0.9245) and subtracts the sum of all avoided
17 costs to develop the line item for losses. In the Generic Docket, DESC did propose
18 adjusting the losses factor to exclude distribution losses for exports as it is not
19 always the case that those exports are delivered to their neighbors. Witness Horii
20 for ORS responded in that docket that he agreed in concept that not all exports can
21 be delivered without subsequent line losses, but he disagreed that losses should not

1 be applied to all exports. He further made the reasonable recommendation that
2 distribution losses be applied in part to losses and proposed 50%. Since this
3 adjustment is still under consideration, DESC is recommending that the
4 Commission continue using the current methodology until the potential adoption
5 of this adjustment, at which time the values should be updated.

6
7 **Q. WITNESS BEACH STATES IN EXHIBIT NO. ____ (RTB-2), PAGE 4, LINES**
8 **6-7, THAT “RESIDENTIAL SOLAR ON THE DESC SYSTEM APPEARS**
9 **TO PASS ALL OF THE COST-EFFECTIVENESS TESTS.” DO YOU**
10 **AGREE WITH THAT STATEMENT?**

11 A. No. The reason that residential solar passes the cost-effectiveness tests
12 applied by Witness Beach is because he uses inflated values for the NEM
13 Distributed Energy Resources categories. As I discussed in my response testimony
14 in the Generic Docket, and shown again in Table 3 below, using the correct values
15 for NEM Distributed Energy Resources demonstrates that residential solar does not
16 pass all the cost-effectiveness tests:

Table 3: Net Benefit Results by Sector (Annualized \$/kWh)

	Sector	Participant Cost Test	Utility Cost Test	Rate Impact Measure	Total Resource Cost Test
Col Row		A	B	C	D
1	Residential	0.11726	0.00000	-0.09112	-0.07655
2	Small Commercial	0.07260	0.00000	-0.08337	-0.01839

Table 3 demonstrates that the net benefits are only positive for the Participant Cost Test while the Rate Impact measure and Total Resource Cost tests yield negative net benefits. The Utility Cost Test is neutral because DESC assumes that the bill savings from self-generation and netting are a direct result of the NEM program and thus equate to incentives that are then recovered through rate riders (which is dependent upon the results of the NEM Methodology).

Witness' Beach's statement is based on a misleading analysis that greatly overestimates the avoided costs using values not approved by this Commission. His estimates of the avoided benefits result in cost-benefits test that are all greater than one (or positive), even the Rate Impact Measure, which is the test that best reflects cost shifts between non-participating and participating customers.

1 **Q. FINALLY, WITNESS BEACH ASSERTS THAT THE COMMISSION**
2 **SHOULD CONSIDER SOCIETAL COSTS IN ASSESSING THE**
3 **EFFECTIVENESS OF NEM DISTRIBUTED ENERGY RESOURCES.**
4 **WHAT IS YOUR RESPONSE TO THAT ASSERTION?**

5 A. I disagree for several reasons. As I noted in my direct testimony in the
6 Generic Docket, while a few jurisdictions consider certain ‘externality’ benefits in
7 assessing the cost effectiveness of a program, they do not use those items in setting
8 rates. More to the point, though, as I testified in the Generic Docket:

9 “First, like ‘direct and indirect economic impacts, these ‘externality costs’
10 are very difficult to quantify and highly dependent upon numerous,
11 contentious assumptions. As I noted above, many of those studies only
12 quantify the benefits of solar and not necessarily the difference, or
13 incremental value, of customer generation solar resources versus wholesale
14 or utility scale solar resources.

15
16 “Second, these ‘externality costs’ are not avoided by the utility. If these
17 ‘externality costs’ are included in setting rates under a NEM program – thus
18 included in the compensation to customers who install generation resources
19 behind the meter – utilities’ costs will increase along with the rates. This is,
20 in effect, a ‘cost shift’ that is based on value to one group of customers that
21 is paid for by another group of customers.

22
23 “Finally, if a utility is required to provide additional compensation for
24 customer generation resources that accounts for these ‘externality costs,’
25 then the utility must charge customers for this additional compensation. This
26 effectively put the Commission in the position of being a taxing authority
27 with the utilities merely collecting these taxes on behalf of the State. That is,
28 the Commission will tax all utility customers through the utility’s rates to
29 generate the revenue necessary to offset the incremental benefits paid to
30 customers with behind the meter generation. In fact, since these customers
31 receive significant State and Federal tax incentives to encourage their
32 investment in these technologies, these ‘externality’ benefits are already

1 being reflected, to some degree, in these incentives and thus including them
2 directly would result in some double counting.”

3 Margot Everett Direct Testimony, Generic Docket, page 18, line 21-page 19, line 20.
4

5 **Q. WHAT ARE YOUR RECOMMENDATIONS FOR PROPOSED AVOIDED**
6 **COSTS?**

7 A. I propose the Commission accept the value of solar as calculated in Witness
8 Bell’s Corrected Direct Testimony. I make this recommendation because the
9 Company’s calculations are reasonable and appropriate and based on its experience
10 and operations. In contrast, Witness Beach uses inflated and unrealistic values for
11 the Company’s NEM Distributed Energy Resources that are unsupported by an
12 analysis of the Company’s actual operations and experience. The unreasonableness
13 of Witness Beach’s proposal is reflected in that fact that he proposes an arbitrarily
14 bloated value for DER is higher than the Company’s retail rate (which he admits on
15 page 9, line 2 of his Direct Testimony). I therefore respectfully recommend that the
16 Commission reject Witness Beach’s proposal for NEM Distributed Energy
17 Resources values and adopt those that are proposed by the Company and that are
18 consistent with the methodology set forth in and required by previous orders issued
19 by this Commission.
20

1 **Q. DOES THIS CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?**

2 A. Yes, it does.